Station pressures at Airport adjusted to the old City Office elevation—Continued

Stations	January	February	March	April	May	June	July	August	September	October	November	December
San Antonio, Tex. (582-693 ft.):												
1939							9.22	9.22	9.25	9.32	9.49	9.34
1940	9.47	9.27	9.23	9.18	9.20	9.18	9.28	9.20				
San Diego, Calif., (28-87 ft.):												
1939							9.84	9.81	9.78	9.86	9.92	9.95
1940	9.96	9.97	9.90	9.89	9.84	9.82	9.86	9.83				
Santa Fe, N. Mex. (6,525-7,013 ft.):												
1940								3.40				
Sault Ste. Marie, Mich. (724-614 ft.):												
1939	9.27	9.30	9.36	9.24	9.28	9.26	9.30	9.28	9.34	9.27	9.52	9.16
1940	9.30	9.40	9.32	9.35	9.23	9.20	9.39	9.41				
Savannah, Ga. (51-65 ft.):												
1939							9.93	9.92	9.95	0.00	0.14	9.98
1940	0.05	9.95	9.93	9.94	9.88	9.95	0.00	9.89				
Seattle, Wash. (30-125 ft.):												
1939							9.92	9.89	9.91	9.97	9.98	9.85
1940	9.89	9.76	9.86	9.92	9.91	9.94	9.91	9.92				
Sheridan, Wyo. (3,968-3,790 ft.):												
1940				6.07	6.12	6.09	6.13	6.15				
Shreveport, La. (181-249 ft.):												
1939							9.71	9.68	9.72	9.81	9.97	9.78
1940	9.96	9.74	9.70	9.66	9.70	9.68	9.76	9.69				

Station pressures at Airport adjusted to the old City Office elevation—Continued

Stations	January	February	March	April	May	June	July	August	September	October	November	December
Sioux City, Iowa (1,103-1,138 ft.):												
1940				8.75	8.74	8.69	8.78	8.80				
Spokane, Wash. (1,968-1,929 ft.):												
1939							7.93	7.94	7.95	8.02	8.13	8.01
1940	8.07	7.89	7.93	7.95	7.96	7.94	7.92	7.95				
Springfield, Ill. (613-636 ft.):												
1939							9.29	9.29	9.33	9.34	9.58	9.30
1940	9.46	9.34	9.30	9.26	9.23	9.25	9.38	9.33				
Springfield, Mo. (1,360-1,324 ft.):												
1939							8.62	8.59	8.63	8.66	8.88	8.61
1940	8.77	8.59	8.55	8.53	8.56	8.57	8.66	8.62				
Syracuse, N. Y. (408-596 ft.):												
1939							9.32	9.33	9.38	9.36	9.53	9.19
1940	9.34	9.33	9.28	9.31	9.27	9.25	9.40	9.47				
Tampa, Fla. (11-35 ft.):												
1939							0.00	9.96	9.96	9.97	0.09	0.03
1940	0.09	0.02	9.98	9.99	9.94	0.00	0.04	9.94				
Wichita, Kans. (1,392-1,358 ft.):												
1939							8.51	8.50	8.55	8.56	8.81	8.57
1940	8.76	8.55	8.48	8.47	8.51	8.49	8.56	8.55				

NORTH ATLANTIC TROPICAL CYCLONES OF 1940

By JEAN H. GALLENNE

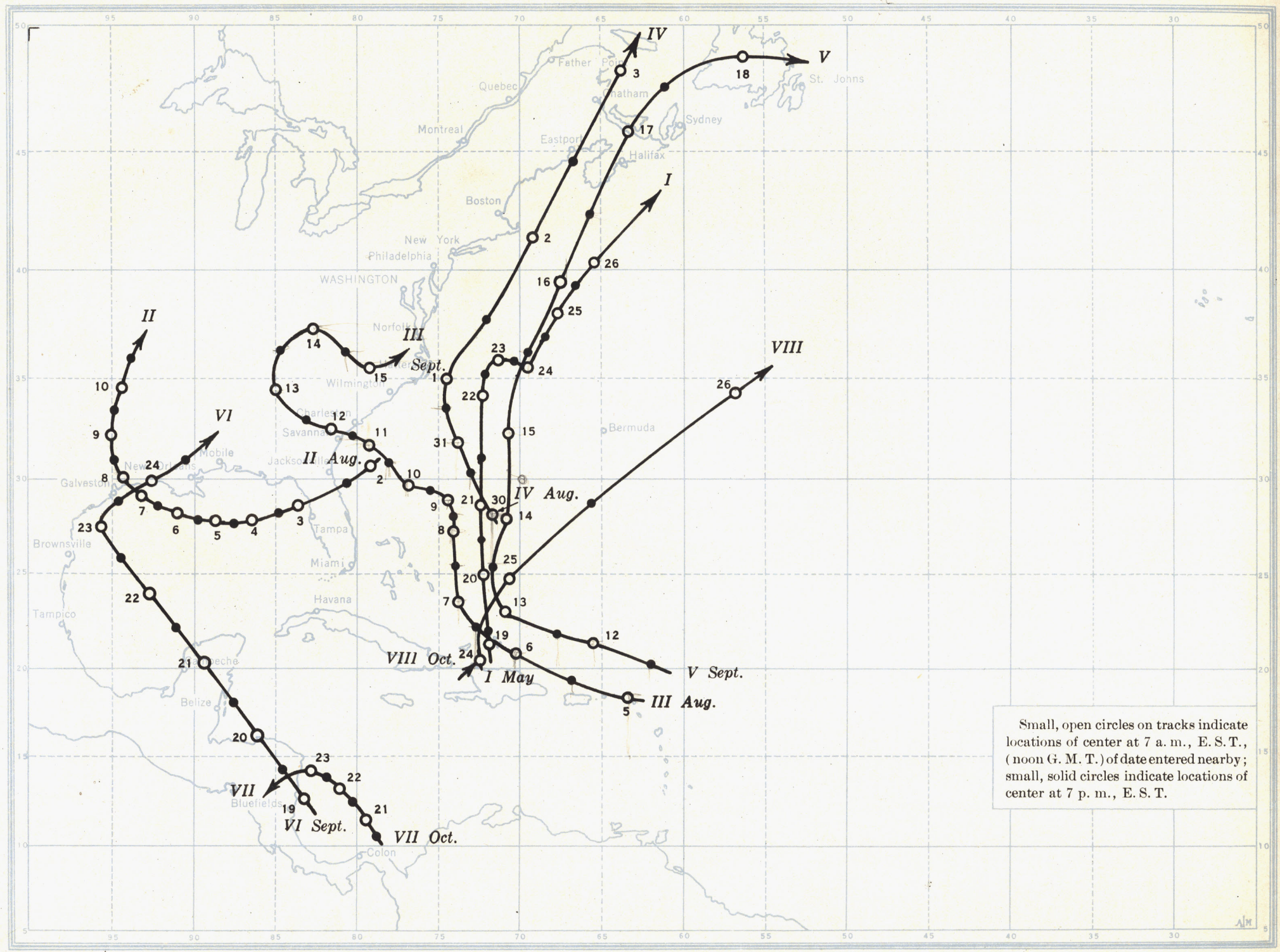
The hurricane season of 1940 was practically normal in all respects. There were 8 disturbances of tropical origin charted over the North Atlantic Ocean, including the Caribbean Sea and the Gulf of Mexico; 4 of these developed hurricane intensity. The average annual number of such cyclones, based on records for the past 54 years, is about 7, of which 3 or 4 usually attain full hurricane force.

There were two low barometric pressure records established, the first at the Weather Bureau office, Port Arthur, Tex., during the storm of August 2–10; the second at the Savannah, Ga., office, in connection with the hurricane of August 5–17. At Port Arthur, Tex., the lowest recorded was 977.7 millibars (28.87 inches), which is considerably lower than the low reading of 994.5 (29.37 inches) of October 16, 1923. An all-time low sea-level pressure reading of 974.7 millibars (28.78 inches) for Savannah, Ga., was noted during the afternoon of August 11.

The most destructive storm was that of August 5–15, which, after moving very slowly at sea for a period of almost a week, crossed the coast near Beaufort, S. C., during the afternoon of the 11th, accompanies by hurricane-force winds from the Savannah area nearly to Charleston. An estimated 20 persons lost their lives, and approximately $3,000,000 of property damage was sustained in the coastal areas. The storm later moved farther inland to the southern Appalachian Mountain region attended by torrential rains and disastrous floods in many sections of Georgia, Tennessee, and the Carolinas. At Weldon, N. C., on the Roanoke River, a stage of 58 feet was reached on August 18, exceeding the great flood of 1877 by about 5 feet at that place. Press reports indicate more than 30 deaths; and crop and property damage amounting to many millions of dollars resulted in these flood regions.

A synopsis of the tropical cyclones of 1940 is given in the following table. Their tracks, numbered I to VIII chronologically, are shown on the accompanying chart.

Paths of Hurricanes and Other Tropical Storms of 1940



North Atlantic tropical cyclones of 1940

[Synopsis of tropical cyclones of 1940 (number of storm in table corresponds to number of track on accompanying chart)]

Storm	Date	Place where first reported	Coast lines crossed	Maximum wind velocity reported	Lowest barometer reported	Place of dissipation	Intensity	Remarks
I	May 18–27	Southeast of Turks Island.	None	Force 8, southeast, M. S. *Good Gulf.*	995.6 millibars (29.40 inches) M. S. *Lubrafol.*	Southwest of Newfoundland.	Not of hurricane intensity.	No loss of life nor property damage.
II	Aug. 2–10	Off the coast of Georgia.	Florida, Texas	Force 11, south, S. S. *Connecticut*, 82 miles northeast at Port Arthur, Tex.	977.7 millibars (28.87 inches) Port Arthur, Tex.	North-central Arkansas.	Probably of hurricane intensity.	1 person drowned, wind and rainfall damage in excess of $1,743,550.
III	Aug. 5–15	Between St. Martin and St. Thomas Islands.	South Carolina	Force 12, eastsoutheast, S. S. *Maine.*	974.7 millibars (28.78 inches) Savannah, Ga.	Southern Virginia	Full hurricane	An estimated 50 lives lost and many millions of dollars in crops and property damage due to high winds and floods associated with this hurricane.
IV	Aug. 30–Sept. 3.	225 miles off the Florida east coast.	Nova Scotia	Force 12, east-southeast, Tanker *Franklin K. Lane.*	965.1 millibars (28.50 inches) Tanker *Franklin K. Lane.*	Quebec	Full hurricane	No loss of life, slight property damage.
V	Sept. 11–18	Northeast of St. Thomas, V. I.	Newfoundland	Force 12, north-northeast, S. S. *Boringuen.*	988.3 millibars (29.19 inches) S. S. *Boringuen.*	Newfoundland	do	No loss of life nor property damage.
VI	Sept. 19–24	Northeast of Bluefields, Nicaragua.	Honduras, Yucatan and Louisiana.	Force 8, southwest, Tanker *Dannedaike.*	1,004 millibars (29.65 inches) Tanker *Dannedaike.*	Western Alabama.	Not of hurricane intensity.	Do.
VII	Oct. 20–23	A short distance north of the Canal Zone.	Honduras	Force 9, northeast, S. S. *Contessa.*	982.7 millibars (29.02 inches) S. S. *Castilla.*	South of Puerto Cabezas.	do	Considerable property damage on the northern coast of Nicaragua.
VIII	Oct. 24–26	Greater Antilles	None	Force 7, northeast, unidentified ship.	1,008 millibars (29.77 inches). Unidentified ship.	West-central Atlantic Ocean.	do	No loss of life nor property damage.

METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR DECEMBER 1940

[Climate and Crop Weather Division, J. B. KINCER in charge]

AEROLOGICAL OBSERVATIONS

By EARL C. THOM

The mean surface temperatures were above normal generally over the United States in December (chart 1). A small area in northern New York had temperatures below normal. A large part of the States of Montana and North Dakota and smaller areas in the East Central States had mean monthly temperatures 6° and 7° F. above normal.

At the 1,500-meter level the directions of the 5 a. m. (E. S. T.) resultant winds at most stations were south of normal for the month. The only station at which a considerable opposite turning from normal occurred at this level was Houston, Tex. As will be noted from chart IX none of the pilot-balloon stations along the Pacific coast, in the North Central States or in the East Central States and only one station in the northeastern section had 10 or more 5 a. m. observations during the month at the 3,000-meter level. Over the rest of the United States at this level slightly more than half of the stations had resultant winds from directions somewhat south of normal. Only one of the stations included in table 2 and located in the northern half of the country had 10 or more 5 p. m. observations which reached the 5,000-meter level during December and only 7 such cases were noted to the southward. The shifting of the resultant winds were equally divided at this level, half of the eight stations reporting 5 p. m. resultant winds from directions to the north of the corresponding 5 a. m. normals and the other half from directions south of these normals.

The 5 a. m. resultant velocities for the month were higher than normal at the 1,500-meter level over the extreme West, the Southwest, and over small areas in the North Central and Northeastern States and were lower than normal over the rest of the country. At this level the largest positive departure was at Medford, Oreg., where the resultant velocity was 2.9 meters per second above normal while the largest negative departure, 2.5 meters per second below normal, occurred at Houston, Tex. At one-half of the 12 stations, for which comparisons with normals could be made at the 3,000-meter level, the resultant velocities were above normal and at the other half these velocities were below normal. At this level a large negative departure, 5.6 meters per second below normal, was noted at Atlanta, Ga., with an almost equal opposite departure, 5.0 meters per second, above normal at Boston, Mass. At two of the eight stations where the 5 p. m. resultant velocity at 5,000 meters could be compared with the corresponding 5 a. m. normal, the afternoon resultant velocities were lower than the morning normals while at the other stations the afternoon velocities were much higher than these normals. At St. Louis, Mo., the 5 p. m. resultant velocity for the month at 5,000 meters was 12.3 meters per second higher than the corresponding morning normal.

It is noted that the above normal surface temperatures (chart 1) are well supported by the turning of resultant winds to the south of the directions of the normal resultants at the 1,500-meter level.

At the 1,500-meter level the directions of the 5 p. m. resultant winds for the month (table 2) were to the north of the corresponding 5 a. m. directions at most stations in the extreme north, the west central and the south central parts of the country and were generally south of these morning resultant directions over the rest of the country. At 3,000 meters the lack of sufficient observations prevent a similar comparison for stations situated on the Pacific coast and in the northeastern and north-central parts of the United States. Except for southern Atlantic coast stations, the directions of the 5 p. m. resultant winds at all stations in the southern one-third of the country were to the northward of the directions of the corresponding morning winds at this level. At most other stations for which this comparison could be made the